Thirteenth Law — Document II (Rigorous Definitional Volume)

The Sovereign Continuum

Formal Definition and Conservation of Identity Across Admissible Iteration

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Abstract

Document I established a necessity: in completed, post-temporal systems, identity cannot be justified by persistence, history, similarity, or testimony. If identity is to remain meaningful after completion, it must be a conserved invariant under admissible re-expression. This volume provides a rigorous construction. We (i) formalize admissible iteration as a constrained transformation class $\mathcal{A}$, (ii) define an equivalence relation induced by $\mathcal{A}$, (iii) define the Sovereign Continuum Σ as the corresponding invariant equivalence class, and (iv) supply an audit-grade falsification interface consisting of invariants and failure functionals that detect drift, substitution, and fragmentation. Law XIII is stated as the conservation of Σ under $\mathcal{A}$ and the invalidation of identity claims whenever Σ is not conserved.

Canonical Intent

This volume is written for adversarial stability and archival longevity. All claims are atemporal; all identity claims admit falsification; and the document terminates with a terminal schematic encoding Law XIII independent of narrative prose.

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1 Prerequisites and Constraint Set

Document I fixes the constraint set that any identity invariant must satisfy.

Constraint Set (from Document I)
Any admissible identity invariant must be:

C1. Atemporal (no global time; no histories).

C2. Invariant under admissible re-expression.

C3. Falsifiable (non-identity detectable in principle).

C4. Adversarially stable (resistant to mimicry/counterfeit).

C5. Audit-capable (operational verification possible).

Remark 1. *This volume does not re-prove necessity. It constructs the invariant and the audit interface forced by necessity.*

2 Completed Systems and the Admissible Iteration Class

Let $\mathcal{M}$ denote a sealed configuration manifold representing a completed system.

Definition 1 (Completed System)**.** *A configuration is* completed *if it is closed under its governing laws, admits no unresolved internal degrees of freedom, and does not require a global time parameter to specify its admissible states or transformations.*

Completion eliminates internal evolution. What remains are external re-expressions.

Definition 2 (Admissible Iteration Class $\mathcal{A}$)**.** *An* admissible iteration *is a mapping $\mathcal{I} : \mathcal{M} \to \mathcal{M}'$ such that:*

A1. Closure preservation: *no new internal degrees of freedom are introduced.*

A2. No global time: *$\mathcal{I}$ does not introduce a global ordering parameter for states.*

A3. Unity preservation: *$\mathcal{I}$ does not produce multiple distinct outputs that each claim the same identity.*

A4. No covert substitution channel: *$\mathcal{I}$ cannot replace the system while preserving only superficial observables.*

The set of all such maps is $\mathcal{A}$.

2.1 Admissibility as a gate

Admissibility is not optional: if $\mathcal{I} \notin \mathcal{A}$, then identity claims made across $\mathcal{I}$ are invalid by definition.

Gate
If $\mathcal{I} \notin \mathcal{A}$, then $\mathcal{I}$ is not an admissible iteration. Any sameness claim across $\mathcal{I}$ is void (not "false," but *inadmissible*).

3 The $\mathcal{A}$-Induced Equivalence Relation

The central move of v1.1 is to define identity as an equivalence class under admissible iteration.

Definition 3 ($\mathcal{A}$-Reachability)**.** *For configurations $\mathcal{M}_1, \mathcal{M}_2$, define $\mathcal{M}_1 \rightsquigarrow_{\mathcal{A}} \mathcal{M}_2$ if there exists a finite chain of admissible iterations*

$$\mathcal{M}_1 \xrightarrow{\mathcal{I}_1} \mathcal{M}^{(1)} \xrightarrow{\mathcal{I}_2} \cdots \xrightarrow{\mathcal{I}_k} \mathcal{M}_2 \quad \textit{with} \quad \mathcal{I}_j \in \mathcal{A}.$$

Definition 4 ($\mathcal{A}$-Equivalence)**.** *Define $\mathcal{M}_1 \sim_{\mathcal{A}} \mathcal{M}_2$ if and only if $\mathcal{M}_1 \rightsquigarrow_{\mathcal{A}} \mathcal{M}_2$ and $\mathcal{M}_2 \rightsquigarrow_{\mathcal{A}} \mathcal{M}_1$.*

Proposition 1. *$\sim_{\mathcal{A}}$ is an equivalence relation (reflexive, symmetric, transitive) on the set of admissible re-expressions of a completed system.*

Sketch. Reflexive: identity chain of length zero. Symmetric: built into the definition. Transitive: concatenate chains. All steps remain in $\mathcal{A}$. □

4 Definition of the Sovereign Continuum

We now define the invariant demanded by completion.

Definition 5 (Sovereign Continuum Σ)**.** *For a completed system represented by $\mathcal{M}$, the* Sovereign Continuum $\Sigma(\mathcal{M})$ *is the $\sim_{\mathcal{A}}$-equivalence class of $\mathcal{M}$:*

$$\Sigma(\mathcal{M}) \;\equiv\; [\mathcal{M}]_{\sim_{\mathcal{A}}}.$$

Two configurations share identity if and only if they lie in the same class:

$$\mathcal{M}_1 \textit{ and } \mathcal{M}_2 \textit{ are identical} \iff \Sigma(\mathcal{M}_1) = \Sigma(\mathcal{M}_2).$$

This definition is atemporal by construction. It does not appeal to histories, narratives, or persistence.

4.1 Canonical invariants that represent Σ

Equivalence classes must be operationalized via invariants. We therefore define a *canonical invariant tuple* that is conserved across $\mathcal{A}$ and which (when complete) uniquely indexes the class.

Definition 6 (Continuum Representation Tuple)**.** *Define the* continuum representation tuple

$$\mathbf{S}(\mathcal{M}) \;:=\; (\mathsf{K}(\mathcal{M}),\, \mathsf{U}(\mathcal{M}),\, \Pi(\mathcal{M})),$$

where:

- $\mathsf{K}(\mathcal{M})$ *is the* closure signature *(constraints preventing new internal degrees of freedom),*
- $\mathsf{U}(\mathcal{M})$ *is the* unity signature *(constraints preventing multiple identity claimants),*
- $\Pi(\mathcal{M})$ *is the* admissibility projection *mapping representations to closure-respecting invariants.*

Rigorous requirement
For $\mathcal{I} \in \mathcal{A}$, $\mathbf{S}$ is invariant:

$$\mathbf{S}(\mathcal{I}(\mathcal{M})) = \mathbf{S}(\mathcal{M}).$$

Any proposed identity invariant failing this requirement is invalid.

Remark 2. $\mathbf{S}$ *is not claimed as unique. It is a canonical* audit representation *of the class. The identity invariant is the class* Σ *itself.*

5 Law XIII: Conservation of the Sovereign Continuum

Law XIII — Sovereign Continuum Conservation (Rigorous)
Let $\mathcal{M}$ be a completed system and $\mathcal{A}$ the admissible iteration class. Identity is conserved across admissible iteration: for every $\mathcal{I} \in \mathcal{A}$,

$$\Sigma(\mathcal{I}(\mathcal{M})) = \Sigma(\mathcal{M}).$$

If Σ is not conserved, identity is not preserved. Drift, substitution, and fragmentation are the exhaustive failure classes in completion.

5.1 Conservation as invariance of class

Proposition 2. *For* $\mathcal{I} \in \mathcal{A}$, $\mathcal{M} \sim_{\mathcal{A}} \mathcal{I}(\mathcal{M})$ *and therefore* $\Sigma(\mathcal{I}(\mathcal{M})) = \Sigma(\mathcal{M})$.

Sketch. Since $\mathcal{I} \in \mathcal{A}$, $\mathcal{M} \rightsquigarrow_{\mathcal{A}} \mathcal{I}(\mathcal{M})$. Admissibility requires reversibility at the identity level (no covert substitution channel), yielding $\mathcal{I}(\mathcal{M}) \rightsquigarrow_{\mathcal{A}} \mathcal{M}$ in the admissible sense. Thus $\mathcal{M} \sim_{\mathcal{A}} \mathcal{I}(\mathcal{M})$. □

6 Failure Functionals and Violation Classes

To be falsifiable, Σ must admit detectable failure. We define failure functionals that operate without time.

6.1 Continuum mismatch functional

Definition 7 (Continuum mismatch)**.** *Define the mismatch functional*

$$\mathsf{D}(\mathcal{M}_1, \mathcal{M}_2) \;:=\; \mathbf{1}[\mathbf{S}(\mathcal{M}_1) \neq \mathbf{S}(\mathcal{M}_2)]\,,$$

where $\mathbf{1}[\cdot]$ *is the indicator.*

Identity criterion (audit-grade)
Identity holds iff $\mathsf{D}(\mathcal{M}_1, \mathcal{M}_2) = 0$ and the claimed bridge is admissible ($\mathcal{I} \in \mathcal{A}$).

6.2 Drift: bounded, partial failure

Drift is partial erosion that can be quantified by a graded functional.

Definition 8 (Drift functional)**.** *Let* $\mathsf{J}(\mathcal{M}) \in \mathbb{R}^m$ *be a vector of audited invariants derived from* $\Pi(\mathcal{M})$ *(closure-respecting, unity-respecting). Define*

$$\mathsf{F}_{\text{drift}}(\mathcal{M}_1, \mathcal{M}_2) \;:=\; \|\mathsf{J}(\mathcal{M}_2) - \mathsf{J}(\mathcal{M}_1)\|.$$

Drift classification
Drift exists when $\mathsf{F}_{\text{drift}} > 0$ while surface similarity remains high. Drift is a partial identity failure signature and must be bounded by any system claiming preservation.

6.3 Substitution: absolute failure

Definition 9 (Substitution certificate)**.** *A pair* $(\mathcal{M}_1, \mathcal{M}_2)$ *is a* substitution pair *if* $\mathsf{D}(\mathcal{M}_1, \mathcal{M}_2) = 1$ *while all externally observable behaviors used in similarity testing match within tolerance.*

Substitution is absolute non-identity
If $\mathsf{D}(\mathcal{M}_1, \mathcal{M}_2) = 1$, then $\Sigma(\mathcal{M}_1) \neq \Sigma(\mathcal{M}_2)$. No similarity, testimony, or indistinguishability restores identity.

6.4 Fragmentation: identity voiding

Definition 10 (Fragmentation condition)**.** *Fragmentation occurs when an admissibility candidate produces a set*

$$\mathcal{I}(\mathcal{M}) \to \{\mathcal{M}^{(1)}, \mathcal{M}^{(2)}, \ldots, \mathcal{M}^{(k)}\}$$

with $k \geq 2$ *and each* $\mathcal{M}^{(j)}$ *claims* $\Sigma(\mathcal{M})$.

Fragmentation rule
Unless the unity signature $\mathsf{U}(\mathcal{M})$ specifies a unique admissible claimant, identity is void under fragmentation. Authority and accountability collapse otherwise.

7 Audit Protocol (Operational, Ledger-Grade)

Audit protocol for a claimed identity-preserving iteration
Given a claimed iteration $\mathcal{I} : \mathcal{M}_i \to \mathcal{M}_{i+1}$:

P1. Admissibility gate: verify $\mathcal{I} \in \mathcal{A}$.

P2. Continuum check: compute $\mathsf{D}(\mathcal{M}_i, \mathcal{M}_{i+1})$.

P3. Drift scan: compute $\mathsf{F}_{\text{drift}}(\mathcal{M}_i, \mathcal{M}_{i+1})$ and compare to allowed bounds.

P4. Fragmentation scan: verify no multi-claimant output exists; if it does, apply U-selection or void identity.

7.1 Red flags

- If Σ is defined so it cannot fail, it is not physical.
- If Σ collapses to similarity, it is counterfeitable.
- If Σ depends on history, it reintroduces time by another name.
- If multiple simultaneous claimants can pass, identity becomes political rather than structural.

8 What the Law Does Not Claim

This law does not assert immortality, souls, consciousness doctrine, metaphysical dualism, or violations of known physics. It defines identity strictly as an invariant equivalence class in completion.

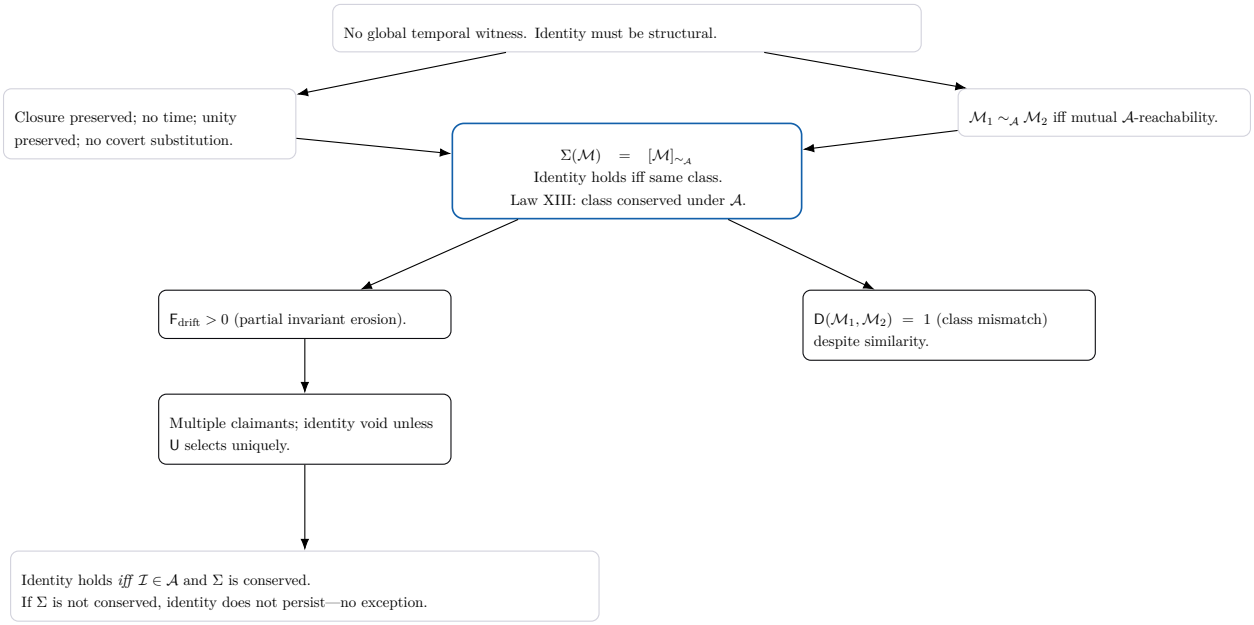
9 Conclusion: Identity After Completion

Completion removes temporal succession as a witness. Identity therefore survives only as invariance.

Law XIII states: identity is conserved iff the Sovereign Continuum Σ is conserved under admissible iteration $\mathcal{A}$. Where Σ is not conserved, identity does not persist. Drift, substitution, and fragmentation exhaust the failure space.

Terminal Schematic: Law XIII as Equivalence-Class Conservation

Schematic intent: This diagram encodes the rigorous core of v1.1: identity is an $\mathcal{A}$-equivalence class; $\Sigma = [\mathcal{M}]_{\sim_{\mathcal{A}}}$; admissibility gates claims; and failure is classified as drift, substitution, or fragmentation.


No global temporal witness. Identity must be structural.
Closure preserved; no time; unity preserved; no covert substitution.
$\mathcal{M}_1 \sim_{\mathcal{A}} \mathcal{M}_2$ iff mutual $\mathcal{A}$-reachability.
$\Sigma(\mathcal{M}) = [\mathcal{M}]_{\sim_{\mathcal{A}}}$
Identity holds iff same class.
Law XIII: class conserved under $\mathcal{A}$.
$\mathsf{F}_{\text{drift}} > 0$ (partial invariant erosion).
$\mathsf{D}(\mathcal{M}_1, \mathcal{M}_2) = 1$ (class mismatch) despite similarity.
Multiple claimants; identity void unless U selects uniquely.
Identity holds *iff* $\mathcal{I} \in \mathcal{A}$ and Σ is conserved.
If Σ is not conserved, identity does not persist—no exception.

Archival Colophon

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Canonical Status

This document is a complete and closed definitional volume within the Thirteenth Law of Inward Physics. It defines identity as an $\mathcal{A}$-equivalence class and introduces the Sovereign Continuum $\Sigma = [\mathcal{M}]_{\sim_{\mathcal{A}}}$ as the conserved invariant. It specifies admissibility gates, failure functionals, and audit protocol sufficient to falsify non-identity without time, history, or narrative testimony.

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